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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,234	02/11/2004	Tae-Wook Kim	GK-US045033	9873
22919	7590	09/10/2007		
GLOBAL IP COUNSELORS, LLP 1233 20TH STREET, NW, SUITE 700 WASHINGTON, DC 20036-2680			EXAMINER LUU, AN T	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/775,234	Applicant(s) KIM ET AL.	
	Examiner An T. Luu	Art Unit 2816	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 6-9 and 14-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6-9 and 14-1719 is/are rejected.
- 7) ☒ Claim(s) 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

Applicant's Amendment filed on 8-1-07 has been received and entered in the case. The rejections set forth in the previous Office Action are maintained as indicated below.

#### ***Claim Objections***

1. Claims 18 and 19 are objected to because of the following informalities: there is no claim 1 in the instant application. Examiner considers these claims depending on claim 6 for purpose of examining their merits. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 6, 7, 9 and 14-17 are rejected under 35 U.S.C. 102(b) as being anticipated by the Groe reference (US Patent 6,205,325).

As to claim 6, Groe disclose in figure 1 a mixer circuit comprising an amplification unit (all but 38 and 48) having an input terminal 14 and an output terminal (emitter of 44), and amplifying a radio frequency signal RF applied to the input terminal to output the signal to the output terminal; a mixing unit 38 having first, second, and third input terminals (gates of Q1, Q2 and node at line 24); first and second output terminals (16, 16'), the third input terminal being connected to the output terminal of the amplification unit (via 46), the mixing unit mixing local oscillation signals (LO and /LO) respectively applied to the first and second input terminals with

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the radio frequency signal supplied to the third input terminal, to output respectively the mixed signals to the first and second output terminals, the mixing unit being arranged between a supply voltage +V and the amplification unit; and a current source 48 being configured to provide a bias current to the amplification unit and third input terminal of the mixing unit, and being connected to the output terminal of the amplification unit and the third input terminal of the mixing unit.

As to claim 7, figure 1 shows the amplification unit includes an amplification element 44 having a first terminal that forms the input terminal, a second terminal (emitter) that forms the output terminal and a third terminal (collector), wherein the quantity and direction of current flowing from the second terminal to the third terminal are varied on the basis of the level of a voltage applied to the first terminal (i.e., basic operation of transistor); and a degeneration impedance 54 connected between the third terminal of the amplification element and a voltage source +V.

As to claim 9, figure 1 discloses the mixer circuit including a first amplification element Q1 having a first terminal (gate) that forms the first input terminal, a second terminal (collector) that forms the first output terminal and a third terminal (emitter), wherein the quantity and direction of current flowing from the second terminal to the third terminal are varied on the basis of the level of a voltage applied to the first terminal; a second amplification element Q2 having a first terminal (gate) that forms the second input terminal, a second terminal (collector) that forms the second output terminal, and a third terminal (collector) connected to the third terminal of the first amplification element to form the third input terminal, wherein the quantity and direction of current flowing from the second terminal to the third terminal are varied on the basis of the level of the voltage applied to the first terminal; and first and second load impedances (64, 66)

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respectively connected between the second terminals of the first and second amplification elements and a voltage source +V.

As to claim 14, it is rejected for reciting an inherent result derived from a configuration of the above circuit.

As to claim 15, figure 1 shows the mixing unit being connected to the amplification unit solely by the third input terminal being connected to the output terminal of the amplification unit.

As to claims 16 and 17, they are rejected for reciting methods/steps derived from the above apparatus.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over the Groe reference (US Patent 6,205,325) in view of the Fong reference (US Patent 6,147,559).

Groe discloses a mixer circuit comprising all the claimed limitations as required by claim 8 except for teaching a capacitor connected between the first and second terminals of the amplification element as required by the claim.

Fong discloses in figure 1 an amplification element Q 1 having a capacitor Cf coupled between the first and second terminals of the amplification element as required by claim 8.

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It would have been obvious to one skilled in the art at the time the invention was made to incorporate the capacitor taught by Fong into Kung's mixer circuit to reduce parasitic capacitance between terminals of a transistor.

A skilled artisan in the art would be motivated to utilize the teaching of Fong for the benefit of improving linearity and noise figure of the electronics circuit (i.e., mixer circuit).

6. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over the Groe reference (US Patent 6,205,325).

A current source is known to be implemented in many different ways in the art, including but not limited to an LC circuit. An Official Notice is taken for an LC current source.

#### ***Response to Arguments***

7. Applicant's arguments filed 8-1-07 have been fully considered but they are not persuasive.

As to the rejection of claim 6 under 35 USC 102, Applicant has argued that the inductor 48 of Groe does not provide a bias current to the amplifier and the mixing unit simply because the transistor 44 and 46 of Groe prevents current in the direction to the mixing stage 38 and the feedback element 26. Examiner respectfully disagrees with Applicant's assertion since current source 48 of Groe is shown to connect to the mixing unit and the amplifier. Therefore, it definitely provides some sort of bias these circuits. Note that providing a bias current to a circuit includes an act of increasing/decreasing current thereof. Therefore, preventing/enhancing the current in the direction to the mixing stage is also seen as an act of biasing.

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As to the rejection of claim 8 under 35 USC 103, Applicant has argued that Fong does not disclose or suggest the current source being configured to provide the bias current to the amplification unit and the mixing unit. Examiner reminds Applicant that claim 8 is rejected under 35 USC 103 and the Fong reference is a secondary reference. Fong discloses a capacitor being configured as required by claim. Such a configuration is well known in the art as a parasitic capacitor. In other words, any transistor in Groe circuitry can be implemented with a parasitic capacitor.

#### *Allowable Subject Matter*

8. Claim 18 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record fails to disclose an apparatus comprising “the current source and the third input are directly connected” as recited in claim 18.

#### *Conclusion*

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to An T. Luu whose telephone number is 571-272-1746. The examiner can normally be reached on Monday to Friday from 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Richards can be reached on 571-272-1736. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

An T. Luu  
8-29-07 *AN*

  
Kenneth B. Wells  
Primary Examiner